UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,359	08/19/2003	Ning An	50277-1068	4851

23517   7590   07/20/2009

BINGHAM MCCUTCHEN LLP
2020 K Street, N.W.
Intellectual Property Department
WASHINGTON, DC 20006

EXAMINER
CAO, PHUONG THAO

ART UNIT	PAPER NUMBER
2164	

MAIL DATE	DELIVERY MODE
07/20/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2009*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6-11,14,15 and 18-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 4, 6-11, 14, 15 and 18-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to Amendment/RCE filed on 5/4/2009 and entered with an

RCE.

2.   Claims 1, 6, 14, 15 and 18-20 have been amended, and claims 2, 5, 12, 13, 16 and 17

were previously cancelled. Currently, claims 1, 3, 4, 6-11, 14, 15 and 18-20 are pending.

Continued Examination Under 37 CFR 1.114

3.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 5/4/2009 has been entered.

Response to Amendment

4.   Amendment to specification filed on 5/4/2009 has been received and entered.

Response to Arguments

5.   Applicant's arguments with respect to claims 1, 3, 4, 6-11, 14, 15 and 18-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

6.   Claims 6, 14, 19 and 20 are objected to because of the following informalities:

Regarding claim 6, there is an extra article "a" in the phrase "into a an existing spatial index" (line 2), the phrase "the plurality entries" (line 8) should be "the plurality of entries", and the phrase "a first one of the selected children"" (line 8) should be "the first one of the selected children" if it refers to "a first one of the selected children" as recited in line 6.

Regarding claim 14, the recited "the groups" in line 11 and line 15 should be "the plurality of groups" to clarify its reference to "a plurality of groups" as recited in line 10.

Regarding claim 19, the phrase "the entries" (line 9) should be "the plurality of entries" to indicate that it refers to "a plurality of entries" as recited in line 2 rather than "entries" as recited in line 5, and the phrase "a first one of the selected children"" (line 9) should be "the first one of the selected children" if it refers to "a first one of the selected children" as recited in line 6. In

addition, the phrase "such that overlap of bounding boxes is reduced" (lines 15-16) should be

changed to "to reduce overlap of bounding boxes".

Regarding claim 20, the recited "the groups" in line 12 and line 15 should be "the

plurality of groups" to clarify its reference to "a plurality of groups" as recited in line 10.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

8.   Claim 1, 3, 4, 6-11 and 18-20 is rejected under 35 U.S.C. 112, first paragraph, as failing

to comply with the written description requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the

claimed invention.

Regarding claims 1 and 18, the limitations "partitioning the entries of the first one of the selected nodes into groups" and "reorganizing a second one of the selected node of the index and the partitioned nodes, wherein said reorganizing includes reorganizing the entries in each of the second one of the selected nodes and the partitioned nodes" are not supported by the specification.

Regarding claims 6 and 19, the limitations "partitioning the entries of the first one of the selected children into groups wherein each group of entries corresponds to a partitioned child" and "reorganizing the partitioned children and a second one of the selected children, wherein the reorganizing including reorganizing the distribution of the entries in each of the second one of the selected children and the partitioned children" are not supported by the specification.

Regarding claim 20, the limitation of "clustering selected children of the node and the children of the buddy node" (line 6) is not supported by the specification.

Other dependent claims 3, 4 and 7-11 are rejected as incorporating the deficiencies of the rejected independent claims upon which they depend correspondingly.

9.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

10.   Claims 1, 3, 4, 6-11, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 18, it is unclear how the step of "selecting nodes of the index…" and the step of "selecting the first one of nodes…" are related. The recitation of "selecting nodes of the index… based on that the selected nodes of the index overlap when the plurality of entries are inserted into a first one of the selected nodes of the index" suggests that the first one of nodes must be selected and inserted with the plurality of entries prior to selecting nodes of the index. However, the recitation of "a first one of selected nodes of the index" (claim 1, line 5) and (claim 18, line 6) and the following step of "selecting the first one of nodes of the index to insert the plurality of entries..." indicates that the first one of nodes is selected from the selected nodes, in other words, the step of selecting the first one of nodes is happened after the step of the selecting of nodes of the index.

Regarding claims 6 and 19, it is unclear how to select at least two and less than all children of a node in the spatial index based on that the selected nodes of the index overlap when the plurality of entries are distributed within a first one of the selected children. The above recitation suggests that a node (i.e., a first one of the selected children) must be selected and inserted with the plurality of entries so based on which to select at least two and less than all children as recited. However, the recitation of "a first one of selected children" (claim 6, line 6) and (claim 19, lines 7) indicates that the first one selected to insert the plurality of entries is

selected from the selected children, in other words, the first one is selected based on the selected

nodes. This creates a confusion where A is selected based on B while B is selected based on A.

Claim 1 recites the limitation "the first one of nodes" in line 7. There is insufficient

antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "the first one of nodes" in line 8. There is insufficient

antecedent basis for this limitation in the claim.

Other dependent claims 3, 4 and 7-11 are rejected as incorporating the deficiencies of

independent claims upon which they depend respectively.

Claim Rejections - 35 USC § 101

11.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

12.   Claims 1, 3, 4, 6-11 and 14-15 rejected under 35 U.S.C. 101 because the claimed

invention is directed to non-statutory subject matter.

Regarding claims 1, 3, 4, 6-11, 14 and 15, these claims are for a method/process. To

satisfy the 101 requirements in view of *In re Bilski*, a process must (1) be tied to another

statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as

an article or materials) to a different state or thing. Since either of the requirements is met by the

recited claims, claims 1, 3, 4, 6-11, 14 and 15 are rejected as being directed to non-statutory

subject matter.

Claim Rejections - 35 USC § 103

13.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

14.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15.   Claims 1, 3, 4, 6-11 and 18-19 (effective filing date 5/15/2003) are rejected under 35

U.S.C. 103(a) as being unpatentable over <u>Wilson et al.</u> (US Patent No 6,070,159, patent date

5/30/2000) in view of <u>Chen et al.</u> ("Merging R-Trees: Effective Strategies for Local Bulk

Insertion", 1999).

        As to claims 1 and 18, <u>Wilson et al.</u> teaches:

"A computer-implemented method of inserting a plurality of entries into an existing

index keyed by multidimensional data" (see <u>Wilson et al.</u>, [column 3, lines 23-35]), comprising:

"selecting nodes of the index each of the selected nodes of the index having entries,

wherein the selection of the nodes of the index is based on that the selected nodes of the index

would overlap when the plurality of entries are inserted into a first one of the selected nodes of

the index" (see <u>Wilson et al.</u>, [column 11, lines 43-46] for locating/selecting children of nodes

that have maximum overlap wherein children of nodes are nodes);

"selecting the first one of nodes of the index to insert the plurality of entries within the

first one of the selected nodes of the index" (see <u>Wilson et al.</u>, [column 10, lines 30-50] for

selecting the leaf node along the data path (i.e., a set of selected nodes) to insert new entry);

"partitioning the entries of the first one of the selected nodes into groups to reduce

overlap, wherein each group of entries corresponds to a partitioned node of the index" (see

<u>Wilson et al.</u>, [column 10, lines 65-67] for dividing or splitting entries of a node and see [column

11, lines 10-15] wherein split nodes are interpreted as partitioned nodes); and

"reorganizing a second one of the selected nodes of the index and the partitioned nodes, wherein said reorganizing includes reorganizing the entries in each of the second one of the selected nodes and the partitioned nodes to reduce overlap" (see Wilson et al., [column 11, lines 20-35] for re-insertion process which inserts entries at the same level wherein re-insertion process as disclosed is interpreted as reorganizing as recited).

However, Wilson et al. does not explicitly teach:

"wherein the selected nodes of the index are sibling nodes"; and

"inserting the plurality of entries within the first one of the selected nodes of the index".

On the other hand, Chen et al. teaches:

"wherein the selected nodes of the index are sibling nodes" (see Chen et al., [page 14, second paragraph] wherein the process of merging siblings requires selecting two closest sibling nodes suitable for merging); and

"inserting the plurality of entries within the first node of the selected nodes of the index" (see Chen et al., [page 12, step 4] for inserting the small tree (i.e., a plurality of entries) into the identified location (i.e., selected node)).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Chen et al. into Wilson et al.'s system. A skilled artisan would have been motivated to do so as suggested by Chen et al. (see Abstract) that bulk inserting a plurality of entries is more effective then one by one insertion. Both of the

references (<u>Wilson et al.</u> and <u>Chen et al.</u>) teaches features that are directed to analogous art and they are directed to the same field of endeavor, such as, index structure for spatial data, R-tree, insertion of data into the index structure, and node merging and splitting. This close relation between both of the references highly suggests an expectation of success.

As to claim 3, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

<u>Wilson et al.</u> and <u>Chen et al.</u> teach:

"the entries include spatial data" (see <u>Chen et al.</u>, [page 7, paragraph 2]); and

"the index keyed by multidimensional data includes a spatial index" (see <u>Chen et al.</u>, [page 7, paragraph 2] and [page 11, Figure 1] for R-tree as an index).

As to claim 4, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

<u>Wilson et al.</u> and <u>Chen et al.</u> teach:

"wherein sibling nodes are for an R-Tree index" (see <u>Chen et al.</u>, [page 11, Figure 1] and [page 14, paragraph 2]).

As to claims 6 and 19, <u>Wilson et al.</u> teaches:

"A computer-implemented method of inserting a plurality of entries into an existing spatial index" (see <u>Wilson et al.</u>, [column 3, lines 23-35]), comprising:

"selecting at least two and less than all children of node in the spatial index each of the

selected nodes of the index having entries, wherein the selection is based on that the selected

children of the index would overlap when the plurality of entries are distributed within a first one

of the selected children of the node of the spatial index" (see Wilson et al., [column 11, lines 43-

46] for locating/selecting children of nodes that have maximum overlap);

"partitioning the entries of the first one of the selected children into groups to reduce

overlap, wherein each group of entries corresponds to a partitioned child of the node in the

spatial index" (see Wilson et al., [column 10, lines 65-67] for dividing or splitting entries of a

node and see [column 11, lines 10-15] wherein split nodes are interpreted as partitioned

children); and

"reorganizing the partitioned children and a second one of the selected children, wherein

said reorganizing includes the distribution the entries in each of the second one of the selected

nodes and the partitioned nodes to reduce overlap" (see Wilson et al., [column 11, lines 20-35]

for re-insertion process which inserts entries at the same level wherein re-insertion process as

disclosed is interpreted as reorganizing as recited).

However, Wilson et al. does not explicitly teach:

"wherein the selected children of the node in the spatial index are sibling"; and

"distributing the plurality of entries within the first one of the selected children".

On the other hand, Chen et al. teaches:

"wherein the selected children of the node in the spatial index are sibling" (see Chen et al., [page 14, second paragraph] wherein the process of merging siblings requires selecting two closest sibling nodes suitable for merging); and

"distributing the plurality of entries within the first one of the selected children" (see Chen et al., [page 12, step 4] for inserting the small tree (i.e., a plurality of entries) into the identified location (i.e., selected children)).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Chen et al. into Wilson et al.'s system. A skilled artisan would have been motivated to do so as suggested by Chen et al. (see Abstract) that bulk inserting a plurality of entries is more effective then one by one insertion. Both of the references (Wilson et al. and Chen et al.) teaches features that are directed to analogous art and they are directed to the same field of endeavor, such as, index structure for spatial data, R-tree, insertion of data into the index structure, and node merging and splitting. This close relation between both of the references highly suggests an expectation of success.

As to claim 7, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected, including the following:

Wilson et al. and Chen et al. teach:

"wherein said organizing includes reorganizing to reduce overlap of bounding boxes for objects in the spatial index" (see Chen et al., [page 7, paragraph 2] for handling overlapping regions; also see Wilson et al., [column 8, line5-10] for reducing overlap by adjusting covering rectangles or bounding boxes).

As to claim 8, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Wilson et al. and Chen et al. teach:

"wherein one of the bounding boxes includes a minimum bounding rectangle (MBR)" (see Wilson et al., [column 10, lines 18-30]; also see Chen et al., [page 10, paragraph 2] and [page 11, paragraph 2]).

As to claim 9, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Wilson et al. and Chen et al. teach:

"wherein at least two of the selected children have respective bounding boxes that overlap with one another" (see Wilson et al., [column 11, lines 42-45]; also see Chen et al., [page 10, paragraph 2] and [page 14, paragraphs 1-2]).

As to claim 10, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Wilson et al. and Chen et al. teach:

"wherein said selecting includes selecting exactly two of the children" (see Chen et al., [page 14, paragraph 2] discloses the merging of the two closest sibling nodes in order to leave an entry slot for the small tree root, this implies the selection of two sibling nodes, as illustrated in Applicant's claim language).

As to claim 11, this claim is rejected based on arguments given above for rejected claim 10 and is similarly rejected including the following:

Wilson et al. and Chen et al. teach:

"wherein the exactly two of the children have respective bounding box that overlap with one another" (see Chen et al., [page 10, paragraph 2] and [page 14, paragraph 2]).

16.   Claims 14-15 and 20 (effective filing date 5/15/2003) are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. ("Merging R-Trees: Effective Strategies for Local Bulk Insertion", 1999) in view of Wilson et al. (US Patent No 6,070,159, patent date 5/30/2000).

As to claim 14 and 20, Chen et al. teaches:

"A computer-implemented method of inserting a plurality of entries into an existing multidimensional-keyed index organized as an R-Tree, comprising:

"associating a node in the R-tree with a buddy node that is a sibling of the node" (see Chen et al., [page 14, second paragraph] for merging siblings);

"clustering children of the node and the children of the buddy node, each of the children having entries" (see Chen et al., [page 14, second paragraph] wherein merging node includes clustering their children),

"partitioning the clustered entries of the node and the buddy node into a plurality of groups, wherein each entry of the node and buddy node corresponds to a child node, and wherein

at least one of the groups includes a child node of node and the buddy node, a buddy child node

associated the child node, and one or more of the plurality of entries, said partition is performed

to reduce overlap among bounding boxes associated with the groups" (see <u>Chen et al.</u>, [page 12,

section 2.2.2, second paragraph] for bulk-loading which includes partitioning old data (entries of

nodes of the index) and new data (a plurality of entries) into groups); and

"reorganizing the child node and the buddy child node associated the child node, wherein

the reorganizing includes reorganizing the distribution of the entries in each of

the child node and the buddy child node associated the child node" (see <u>Chen et al.</u>, [page 14,

second paragraph] wherein merging two siblings is interpreted as reorganizing the child nod and

the buddy child node as recited).

However, <u>Chen et al.</u> does not teach:

"inserting said one or more of the plurality of entries among the child node and the buddy

child node associated the child node".

On the other hand, <u>Wilson et al.</u> teach:

"inserting said one or more of the plurality of entries among the child node and the buddy

child node associated the child node" (see <u>Wilson et al.</u>, [column 11, lines 20-25] for inserting

entries at the same level is interpreted as inserting entries among child node and buddy child

node as recited).

It would have been obvious to a person having ordinary skill in the art at the time the

invention was made to incorporate the teaching of <u>Wilson et al.</u> into <u>Chen et al.</u>'s system. A

skilled artisan would have been motivated to do so as suggested by <u>Chen et al.</u> (see Abstract) that

bulk inserting a plurality of entries is more effective then one by one insertion. Both of the

references (Wilson et al. and Chen et al.) teaches features that are directed to analogous art and

they are directed to the same field of endeavor, such as, index structure for spatial data, R-tree,

insertion of data into the index structure, and node merging and splitting. This close relation

between both of the references highly suggests an expectation of success.

As to claim 15, this claim is rejected based on arguments given above for rejected claim

14 and is similarly rejected including the following:

Chen et al. and Wilson et al. teach:

"each node of the R-tree is associated with a respective bounding box" (see Chen et al.,

[page 11, paragraph 2] for MBR of each node); and

"a first bounding box associated with the child node overlap a second bounding box

associated with the buddy child node" (see Chen et al., [page 10, paragraph 2] for overlapping

between the sibling MBRs).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong-Thao Cao whose telephone number is (571)272-2735. The examiner can normally be reached on 8:30 AM - 5:00 PM (Mon - Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hung T Vy/
Primary Examiner, Art Unit 2163

Phuong-Thao Cao, Examiner
Art Unit 2164
July 8, 2009